AD-A102 721 NEW JERSEY DEPT OF ENVIRONMENTAL PROTECTION TRENTON --ETC F/G 13/13
NATIONAL DAM SAFETY PROGRAM. N.J. NO NAME NUMBER 30 DAM (NJ0033--ETC(U)
JUL 81 J J WILLIAMS DACW61-79-C-0011

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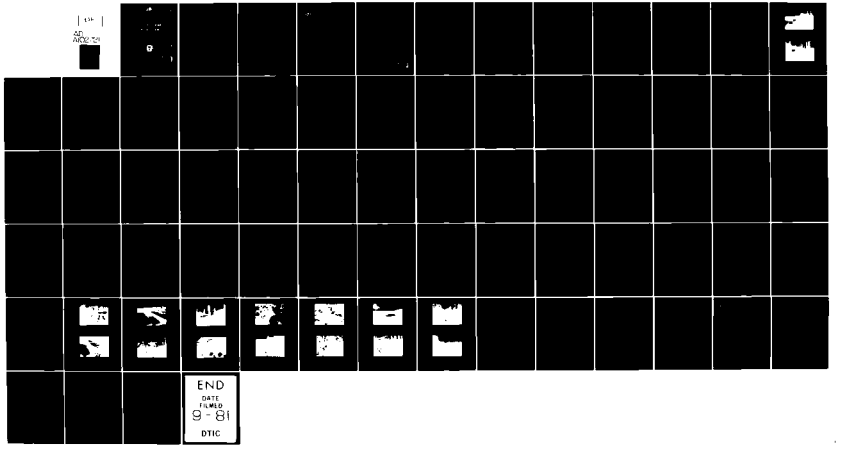

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LEVEL II

DELAWARE RIVER BASIN
WELDON BROOK, MORRIS COUNTY
NEW JERSEY

N.J. NO NAME
NO. 30 DAM
NJ 00339

PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

DEPARTMENT OF THE ARMY
Philadelphia District
Corps of Engineers
Philadelphia, Pennsylvania

REPT. NO: DAEN/NAP-53842/NJ00339-81/07

JULY 1981

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
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4. TITLE (and Subtitle): Phase I Inspection Report National Dam Safety Program N.J. No Name No. 30 Dam, NJ 00339 Morris County, NJ		5. TYPE OF REPORT & PERIOD COVERED: FINAL
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7. AUTHOR(s): Williams, John J., P.E.		8. CONTRACT OR GRANT NUMBER(s): DACW61-79-C-0011
9. PERFORMING ORGANIZATION NAME AND ADDRESS: O'Brien & Gere Engineers Inc. Suite 1760 11617 J.F.K. Blvd. Phila. Pa. 19103		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS: NJ Department of Environmental Protection Division of Water Resources P.O. Box CN029 Trenton, NJ 08625		12. REPORT DATE: July, 1981
		13. NUMBER OF PAGES: 50
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): U.S. Army Engineer District, Philadelphia Custom House, 2d & Chestnut Streets Philadelphia, PA 19106		15. SECURITY CLASS. (of this report): Unclassified
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16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

National Dam Safety Program. N.J. No Name Number 30 Dam (NJ00339), Delaware River Basin, Weldon Brook, Morris County, New Jersey. Phase I Inspection Report.

18. SUPPLEMENTARY NOTES

Copies are obtainable from National Technical Information Service, Springfield, Virginia 22151.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Dams	National Dam Safety Program	Riprap
Embankments	N.J. No Name No. 30 Dam, N.J.	Seepage
Visual Inspection	Delaware River Basin	Spillways
Structural Analysis	Weldon Brook, NJ	Outlet works

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report cites results of a technical investigation as to the dam's adequacy. The inspection and evaluation of the dam is as prescribed by the National Dam Inspection Act, Public Law 92-367. The technical investigation includes visual inspection, review of available design and construction records, and preliminary structural and hydraulic and hydrologic calculations, as applicable. An assessment of the dam's general condition is included in the report.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
CUSTOM HOUSE—2 D & CHESTNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

IN REPLY REFER TO
NAPEN-N

31 JUL 1981

Honorable Brendan T. Byrne
Governor of New Jersey
Trenton, New Jersey 08621

Dear Governor Byrne:

Inclosed is the Phase I Inspection Report for N.J. No Name No. 30 Dam in Morris County, New Jersey which has been prepared under authorization of the Dam Inspection Act, Public Law 92-367. A brief assessment of the dam's condition is given in the front of the report.

Based on visual inspection, available records, calculations and past operational performance, N.J. No Name No. 30 Dam, initially listed as a high hazard potential structure, but reduced to a significant hazard potential structure as a result of this inspection, is judged to be in poor overall condition. The dam's spillway is considered inadequate because a flow equivalent to 20 percent of the Spillway Design Flood (SDF) would cause the dam to be overtopped. (The SDF in this instance is one half of the Probable Maximum Flood.) To ensure adequacy of the structure, the following actions, as a minimum, are recommended:

a. The spillway's adequacy should be determined by a qualified professional consultant engaged by the owner using more sophisticated methods, procedures and studies within three months from the date of approval of this report. Within three months of the consultant's findings remedial measures to ensure spillway adequacy should be initiated.

b. Within three months from the date of approval of this report the owner should engage a qualified professional consultant to perform the following:

(1) Stability analyses should be performed to determine the need for and type of mitigating measures required to ensure that the dam is stable.

(2) The cause of the seepage should be investigated and, if necessary, a means of seepage control should be designed and implemented.

(3) During or following the installation of drawdown facilities, the reservoir should be lowered to permit a survey of the dam (particularly to define the upstream slope) and to assess the extent of sedimentation within the reservoir.

c. Within three months from the date of approval of this report the following remedial actions should be initiated:

(1) The outlet works should be repaired to allow for emergency drawdown of the reservoir.

(2) Trees and bushes should be removed from the face of the embankment. Any remaining voids should be filled with suitable, thoroughly compacted material.

(3) The downstream channel should be kept free of debris.

(4) Bare spots on the embankment should be seeded to control erosion and riprap should be placed on the upstream slope to provide erosion protection.

(5) The deteriorated concrete on the spillway should be repaired.

d. The owner should develop written operating procedures and a periodic maintenance plan to ensure the safety of the dam, within one year from the date of approval of this report.

e. An emergency action plan and warning system should be developed which outlines actions to be taken by the owner to minimize the downstream effects of an emergency at the dam within six months from the date of approval of this report.

A copy of the report is being furnished to Mr. Dirk C. Hofman, New Jersey Department of Environmental Protection, the designated State Office contact for this program. Within five days of the date of this letter, a copy will also be sent to Congressman Courter of the Thirteenth District. Under the provision of the Freedom of Information Act, the inspection report will be subject to release by this office, upon request, five days after the date of this letter.

Additional copies of this report may be obtained from the National Technical Information Services (NTIS), Springfield, Virginia 22161 at a reasonable cost. Please allow four to six weeks from the date of this letter for NTIS to have copies of the report available.

NAPEN-N
Honorable Brendan T. Byrne

An important aspect of the Dam Inspection Program will be the implementation of the recommendations made as a result of the inspection. We accordingly request that we be advised of proposed actions taken by the State to implement our recommendations.

Sincerely,

ROGER L. BALDWIN
Lieutenant Colonel, Corps of Engineers
Commander and District Engineer

1 Incl
As stated

Copies furnished:
Mr. Dirk C. Hofman, P.E., Deputy Director
Division of Water Resources
N.J. Dept. of Environmental Protection
P.O. Box CN029
Trenton, NJ 08625

Mr. John O'Dowd, Acting Chief
Bureau of Flood Plain Regulation
Division of Water Resources
N.J. Dept. of Environmental Protection
P.O. Box CN029
Trenton, NJ 08625

N.J. NO NAME NO. 30 DAM (NJ00339)

CORPS OF ENGINEERS ASSESSMENT OF GENERAL CONDITIONS

This dam was inspected on 24 April 1981 by O'Brien and Gere Engineers, Inc. under contract to the U.S. Army Engineer District, Philadelphia, in accordance with the National Dam Inspection Act, Public Law 92-367.

N.J. No Name No. 30 Dam, initially listed as a high hazard potential structure, but reduced to a significant hazard potential structure as a result of this inspection, is judged to be in poor overall condition. The dam's spillway is considered inadequate because a flow equivalent to 20 percent of the Spillway Design Flood (SDF) would cause the dam to be overtopped. (The SDF in this instance is one half of the Probable Maximum Flood.) To ensure adequacy of the structure, the following actions, as a minimum, are recommended:

a. The spillway's adequacy should be determined by a qualified professional consultant engaged by the owner using more sophisticated methods, procedures and studies within three months from the date of approval of this report. Within three months of the consultant's findings remedial measures to ensure spillway adequacy should be initiated.

b. Within three months from the date of approval of this report the owner should engage a qualified professional consultant to perform the following:

(1) Stability analyses should be performed to determine the need for and type of mitigating measures required to ensure that the dam is stable.

(2) The cause of the seepage should be investigated and, if necessary, a means of seepage control should be designed and implemented.

(3) During or following the installation of drawdown facilities, the reservoir should be lowered to permit a survey of the dam (particularly to define the upstream slope) and to assess the extent of sedimentation within the reservoir.

c. Within three months from the date of approval of this report the following remedial actions should be initiated:

(1) The outlet works should be repaired to allow for emergency drawdown of the reservoir.

(2) Trees and bushes should be removed from the face of the embankment. Any remaining voids should be filled with suitable, thoroughly compacted material.

(3) The downstream channel should be kept free of debris.

(4) Bare spots on the embankment should be seeded to control erosion and riprap should be placed on the upstream slope to provide erosion protection.

(5) The deteriorated concrete on the spillway should be repaired.

d. The owner should develop written operating procedures and a periodic maintenance plan to ensure the safety of the dam, within one year from the date of approval of this report.

e. An emergency action plan and warning system should be developed which outlines actions to be taken by the owner to minimize the downstream effects of an emergency at the dam within six months from the date of approval of this report.

APPROVED: Roger Baldwin

ROGER L. BALDWIN
Lieutenant Colonel, Corps of Engineers
Commander and District Engineer

DATE: 31 July 81

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and anlayses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data availabe to the inspection team. It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. The test flood provides a measure of relative spillway capacity and serves as an aid in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

PHASE I REPORT

NATIONAL DAM INSPECTION REPORT

Name of Dam:	New Jersey No Name No. 30 Dam
State Located:	New Jersey
County Located:	Morris County
Stream:	Weldon Brook
Coordinates:	N41°00.2', W74°35.3'
Date of Inspection:	April 24, 1981

ASSESSMENT

Based on visual observations made during the inspection and conversations with the Owner's representative, New Jersey No Name No. 30 Dam is considered to be in poor overall condition.

The dam is an earth embankment approximately 500 feet long with a maximum height of about 24 feet. The top width of the dam varies from approximately 10 feet near the spillway to about 70 feet near the abutments. The upstream slope is about 1H:IV and the downstream slope varies from about 4H:IV to 1H:IV. The spillway section has a crest length of 10.5 feet and the freeboard between the spillway crest and the top of the dam is about 3 feet.

Many large trees were observed growing from the embankment. Seepage was noted at the downstream toe of the embankment near the right abutment and about 100 feet to the left of the spillway. The reservoir drawdown system is not operable. At the toe of the embankment some water was observed flowing from the 12-inch diameter reinforced concrete pipe of the reservoir drain. Portions of the concrete spillway section have eroded and steel reinforcement is visible in some places.

The selected Spillway Design Flood (SDF) for this "Small" size, "Significant" hazard dam is one-half of the Probable Maximum Flood (PMF). Examination of the results of the hydrologic and hydraulic analyses indicates that the spillway is capable of discharging approximately 19 percent of the SDF prior to overtopping of the embankment. Failure of the dam would cause appreciable property damage and possible loss of life downstream. The spillway is classified as "Inadequate".

The Owner should retain the services of a licensed professional engineer experienced in the design and construction of dams to assist in complying with the following recommendations and remedial measures.

The recommendations and remedial measures which should be initiated very soon are as follows:

a. Facilities

1. Detailed hydrologic and hydraulic analyses should be performed to determine the need for and type of mitigating measures necessary to provide adequate spillway capacity.

2. Stability analyses should be performed to determine the need for and type of mitigating measures required to ensure that the dam is stable.

3. The outlet works should be repaired to allow for emergency drawdown of the reservoir.

4. The cause of the seepage should be investigated and, if necessary, a means of seepage control should be designed and implemented.

5. Trees and bushes should be removed from the face of the embankment. Any remaining voids should be filled with suitable, thoroughly compacted material.

6. The downstream channel should be kept free of debris.

7. Bare spots on the embankment should be seeded to control erosion and riprap should be placed on the upstream slope to provide erosion protection.

8. The deteriorated concrete on the spillway should be repaired.

9. During or following the installation of drawdown facilities, the reservoir should be lowered to permit a survey of the dam (particularly to define the upstream slope) and to assess the extent of sedimentation within the reservoir.

b. Operation and Maintenance Procedures.

1. The Owner should develop written operating procedures and a periodic maintenance plan to ensure the safety of the dam within one year from the date of approval of this report.

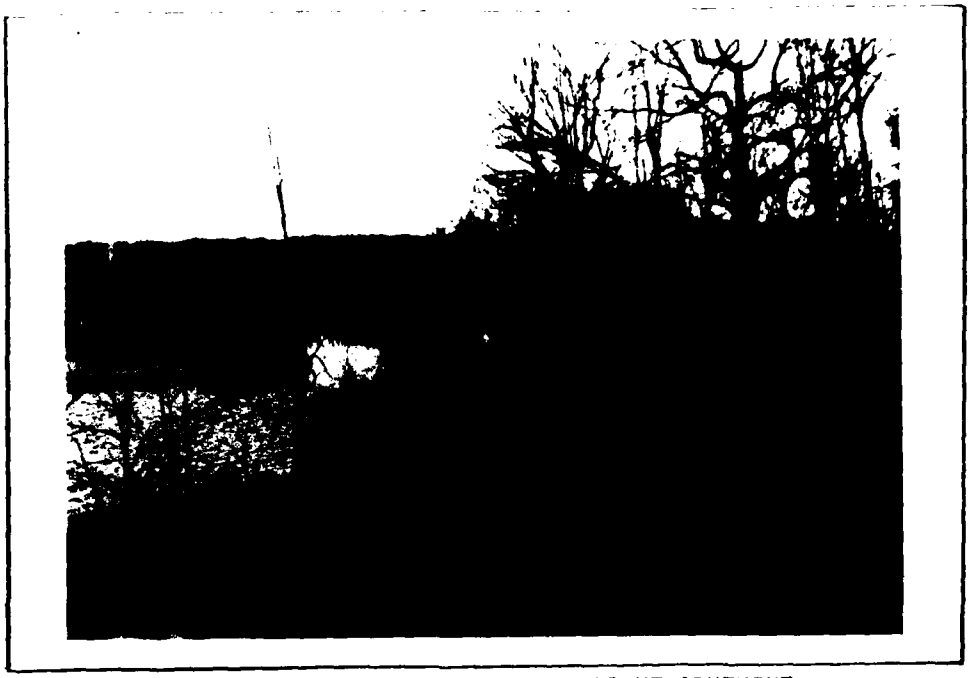
2. An emergency action plan should be developed which outlines actions to be taken by the Owner to minimize the downstream effects of an emergency. This plan should include an effective warning system.

O'BRIEN & GERE ENGINEERS, INC.

John J. Williams

John J. Williams, P.E.
Vice President
New Jersey Registration No. 24916

Date: 27 July 1981



UPSTREAM OVERVIEW AS OBSERVED FROM THE RIGHT ABUTMENT. (4/24/81)

DOWNSTREAM OVERVIEW AS OBSERVED FROM THE DOWNSTREAM EMBANKMENT SLOPE. (4/24/81)

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(Continued)

PHASE I INSPECTION REPORT

NATIONAL DAM INSPECTION PROGRAM
NEW JERSEY NO NAME NO. 30 DAM
NDI ID NJ 00339

SECTION 1

PROJECT INFORMATION

1.1 General

a. Authority. This report is authorized by the Dam Inspection Act, Public Law 92-367, and has been prepared in accordance with contract #DACW61-80-D-0013 between O'Brien & Gere Engineers, Inc. and the United States Army Corps of Engineers, Philadelphia District.

b. Purpose of Inspection. The purpose of the inspection is to evaluate the structural and hydraulic condition of New Jersey No Name No. 30 Dam and appurtenant structures and to determine if the dam constitutes a hazard to human life or property.

1.2 Project Description (Based on information obtained from the representative of the Owner, David E. Estler, (Morris County) and observations made during the field inspection).

a. Description of Dam and Appurtenances. New Jersey No Name No. 30 Dam is an earth embankment approximately 500 feet long with a maximum height of about 24 feet. The crest width varies from about 10 feet for an approximate 200-foot portion of the dam beginning about 100 feet from the right abutment to 70 feet near the abutments. The downstream embankment slope varies from about 1H:1V to about 4H:1V in the vicinity of the abutments.

The spillway is a broad crested concrete overflow weir located about 100 feet from the right abutment. The crest length of the weir is 10.5 feet including a 4 feet long notch one foot deep. A wooden walkway supported by steel stringers spans the spillway. The bottoms of the stringers allow about one foot of clearance to the weir crest and about two feet to the weir notch. The spillway discharges onto a rock outcrop from which the water falls freely to the downstream channel.

The reservoir drain system is a 12-inch diameter reinforced concrete pipe located about 50 feet left of the spillway. A concrete control box is located on the upstream face of the embankment and the reservoir drain pipe outlets at the downstream toe of the dam.

b. Location. New Jersey No Name No. 30 Dam is located on Weldon Brook in Jefferson Township, Morris County, New Jersey. The site is shown on the USGS Quadrangle entitled "Franklin, N.J." at coordinates N41°00.2', W74°35.3'. A regional location map of the site is included as Figure 1 in Appendix E.

c. Size Classification. No Name No. 30 Dam has a maximum height of 24 feet and a maximum storage capacity of 147 acre feet. These criteria place the dam in the "Small" size category (height less than 40 ft., storage less than 1,000 acre feet).

d. Hazard Classification. At least a half dozen homes are located in the vicinity of the confluence of Weldon Brook with Lake Shawnee approximately 1.9 miles downstream of the dam. All of the homes except one are a significant distance above the streambed. The first floor of one of the residences is about 3 feet above the streambed. Failure of the dam could result in appreciable property damage and possible loss of life at this location. Therefore, No Name No. 30 is classified in the "Significant" hazard potential category.

e. Ownership. New Jersey No Name No. 30 Dam is owned by the Morris County Park Commission, 53 East Hanover Avenue, P. O. Box 1295-R, Morristown, New Jersey 07960. Telephone: (201) 285-6166.

f. Purpose of Dam. No Name No. 30 is currently used for incidental recreation only.

g. Design and Construction History. No information is available concerning the design and construction history of the dam. According to the Owner's representative, David E. Estler, the impoundment was used for ice harvesting 50 or more years ago.

h. Normal Operating Procedures. According to the Owner's representative, no operating procedures exist for this dam.

1.3 Pertinent Data

a. Drainage Area

Square Miles	0.94

b. Discharge at Dam Site (cfs).

Spillway Capacity (Low Point Top of Dam Elevation 1138.3)	166

c. Elevation (Feet Above NGVD).

Spillway Crest (Normal Pool)	1135.0
Top of Dam (Maximum Pool, Low Point Top of Dam)	1138.3
Streambed at Downstream Toe of Dam	1114.3

d. Reservoir Length (Feet).

Normal Pool	1,000
Maximum Pool, Low Point Top of Dam	1,200

e. Storage (Acre-Feet).

Normal Pool	95
Maximum Pool, Low Point Top of Dam	147

f. Reservoir Surface Area (Acres).

Normal Pool	13.5
Maximum Pool, Low Point Top of Dam	18.7

g. Dam Data.

Type	Earth
Length	500 Feet
Height	24 Feet
Top Width	Varies from 10 Feet to 70 Feet
Side Slopes (Upstream)	1H:1V
Side Slopes (Downstream)	Varies from 1H:1V to 4H:1V
Zoning	Unknown
Impervious Core	Unknown
Cutoff	Unknown
Grout Curtain	Unknown

h. Spillway.

Type	Concrete Overflow
Crest Length:Total	10.5 Feet
Crest Length: Notch	4.0 Feet
Crest Elevation: Upper Level	1136.0
Crest Elevation: Notch	1135.0
Gates	None
Upstream Channel	Impoundment
Downstream Channel	Natural Streambed

i. Outlet Works. 12-inch diameter reinforced concrete reservoir drain with inoperable gate.

SECTION 2

ENGINEERING DATA

2.1 Design

a. Data Available. According to the Owner's representative, David R. Estler, no design data or drawings are available for this structure.

b. Design Features. The principal design features for this structure are discussed in Section 1.2a.

2.2 Construction

According to the Owner's representative, no information relative to the original construction of New Jersey No Name No. 30 Dam is available.

2.3 Operation

According to the Owner's representative, no operational data is available for this site.

2.4 Evaluation

a. Availability. All information was obtained from the visual inspection of the dam.

b. Adequacy. The observations made during the field investigations and conversations with the Owner's representative provided adequate data for a Phase I evaluation.

c. Validity. The information obtained during the field investigation should be valid.

SECTION 3

VISUAL INSPECTION

3.1 Findings

a. General. The field inspection of New Jersey No Name No. 30 Dam took place on April 24 and May 4, 1981. At the time of both inspections, the reservoir water surface was approximately 6 inches above the spillway crest elevation. No underwater areas were inspected. The observations and comments of the field inspection team are in the checklist which is Appendix B of this report. The appearance of the facility indicates that the dam is inadequately maintained.

b. Dam. The crest of the embankment is grass covered. Many large trees were observed on the downstream slope and at random locations on the crest. No riprap protection exists on the upstream face. At the time of the inspection, the freeboard averaged about 3 feet. The crest width varies from about 10 feet for an approximately 200-foot long portion of the dam beginning about 100 feet from the right abutment to 70 feet near the abutments. The downstream slope varies from about 1H:1V to 4H:1V near the abutments. The visible embankment material consists of large rocks and gravel. Many large boulders were observed along the toe of the dam. A concrete wall retains the downstream face of the embankment adjacent to the left side of the spillway. The wood formwork is still in place and steel reinforcing rods protrude from the left end of the wall. To the left of the wall, concrete is embedded in the downstream face of the embankment, about 10 feet below the crest. The 12-inch diameter reinforced concrete reservoir drain pipe outlets from the downstream toe of the embankment about 50 feet left of the spillway. Timber cribbing in poor condition is located in the vicinity of the outlet of the reservoir drain pipe. At the time of the inspection, about 2 gpm was observed discharging from the reservoir drain pipe. The discharge may be attributed either to a poor valve seal or to open joints in the pipe. About 100 feet left of the spillway and 175 feet from the crest, at the toe of the embankment, seepage (5 gpm) and ponding was observed. The seepage was observed to be flowing from two sources about 10 feet apart. Seepage was also observed (about 3 gpm) in the downstream face of the right abutment. The ground in this area appeared very soft and moist. All the seepage water observed had an iron oxide discoloration.

c. Appurtenant Structures. The concrete abutments of the spillway are severely spalled. Large chunks of concrete can be easily removed by hand. Exposed reinforcing bars are visible on the left side of the spillway. The damage was observed to be most severe on the upstream side. The spillway discharges onto a large rock outcrop and the water falls vertically from the rock to the discharge channel at the toe of the dam.

The reservoir drain valve in the concrete control box is inoperable.

d. Reservoir Area. The reservoir slopes are heavily forested. The banks of the reservoir are on slopes varying from 5 to 25 percent. No indication of excessive sedimentation was noted in the reservoir.

e. Downstream Channel. The downstream channel is ill defined and littered with boulders and logs. The side slopes are poorly defined varying from nearly vertical to 10H:1V in some spots. The channel bottom averages about 10 feet in width and the gradient averages about 2 percent.

SECTION 4

OPERATIONAL PROCEDURES

4.1 Procedures

According to the Owner's representative, no known operational procedures exist for the dam.

4.2 Maintenance of Dam

According to the Owner's representative, no written maintenance procedures exist for the dam. Regular maintenance consists only of cutting the grass on the crest of the dam.

4.3 Maintenance of Operating Facilities

According to the Owner's representative, no operating facilities are maintained at the dam.

4.4 Description of any Warning Systems in Effect

According to the Owner's representative, no system of warning downstream residents in the event of an overtopping flood or a breach flood exists at this site.

4.5 Evaluation of Operational Adequacy

The reservoir drain should be repaired and operated on a regular basis.

A periodic inspection and maintenance program should be implemented and a formal warning system should be established.

SECTION 5

HYDRAULICS AND HYDROLOGY

5.1 Evaluation of Features

a. Design Data. No hydrologic or hydraulic data from the original design is available for the dam. New Jersey No Name No. 30 Dam has a drainage area of 0.94 square miles. The maximum length of the watershed is about 1.3 miles and the maximum width is about 0.75 miles. The ground in the watershed varies from a maximum of approximately Elevation 1380 to Normal Pool Elevation 1135. Nearly the entire watershed is forest covered with no populated areas. The spillway has an estimated discharge capacity of 166 cfs.

For further information, refer to the calculations and computer printout included in Appendix C of this report.

b. Experience Data. According to the Owner's representative, no rainfall or reservoir level records are maintained at this site.

c. Visual Observations. At the time of the inspection, the spillway was free of obstructions. The spillway discharge channel consists of a natural rock outcrop from which the discharge water falls freely to the downstream channel. The downstream channel is only about 10 feet wide and obstructed with boulders and debris.

d. Overtopping Potential. The recommended Spillway Design Flood (SDF) range for a "Small" size, "Significant" hazard dam is from the 100 year flood to one-half of the Probable Maximum Flood (PMF). The selected SDF is one-half of the PMF. The SDF was synthesized from one-half of the Probable Maximum Precipitation (PMP) using the SCS unit hydrograph for the No Name No. 30 dam drainage basin. The resulting SDF hydrograph was routed through the dam with the initial water surface elevation at the spillway crest, Elevation 1135. The peak inflow and outflow rates for the SDF were computed to be about 1694 cfs and 1679 cfs, respectively. The spillway is capable of discharging approximately 19 percent of the SDF prior to overtopping of the embankment (refer to Appendix C for computations and the computer printout).

e. Spillway Adequacy. The spillway is considered "Inadequate" since it is not capable of discharging the SDF.

SECTION 6

STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability

a. Visual Observations. Seepage (5 gpm) was observed at the downstream toe of the embankment about 100 feet to the left of the spillway and about 175 feet downstream of the crest. Seepage (3 gpm) was also observed at the downstream toe of the embankment along the right abutment.

The downstream embankment is very steep (1H:1V) in the vicinity of the spillway. The embankment appears to be constructed of large rocks and gravel.

The trees growing from the embankment present potential hazards to the structural integrity of the dam. The root systems create seepage paths through the embankment and, if uprooted during severe wind conditions, could remove portions of the embankment.

Based on the field inspection, New Jersey No Name No. 30 Dam does not appear to be stable for all static loading conditions; therefore, the condition of the dam is such that it warrants a further stability investigation.

b. Design and Construction Data. According to the Owner's representative, no known design or construction data is available for New Jersey No Name No. 30 Dam.

c. Operating Records. According to the Owner's representative, no operating records for the reservoir exist.

d. Post Construction Changes. According to the Owner's representative, no known records of post construction changes of the dam exist.

e. Seismic Stability. New Jersey No Name No. 30 Dam is located in Seismic Zone 1 on the "Seismic Zone Map of Contiguous States." A dam located in Seismic Zone 1 is generally considered to be safe under expected earthquake loadings in this zone if it is stable under static loading conditions. The dam, however, does not appear that it would be stable for all static loading conditions. Therefore, it is questionable whether the dam would be stable under expected Zone 1 earthquake loadings.

SECTION 7

ASSESSMENT, RECOMMENDATIONS, AND PROPOSED REMEDIAL MEASURES

7.1 Dam Assessment

a. Safety. From visual observations New Jersey No Name No. 30 Dam is considered to be in poor condition. The deficiencies and problem areas noted in Sections 3.1b, 3.1c, and 6.1a indicate a general lack of maintenance and an inadequate original design.

The selected SDF for this structure is one-half of the PMF. The spillway is capable of discharging approximately 19 percent of the SDF prior to overtopping of the embankment. Failure of the dam would probably result in appreciable property damage and possible loss of life downstream of the dam. Therefore, the spillway is classified as "Inadequate".

b. Adequacy of Information. The information obtained from conversations with the Owner's representative and observations made during the field investigations provided adequate data for a Phase I evaluation.

c. Urgency. The recommendations and remedial measures described in Section 7.2 should be initiated very soon.

d. Necessity for Further Evaluation. Further investigations should be performed in accordance with Section 7.2a.

7.2 Recommendations and Proposed Remedial Measures

The Owner should retain the services of a licensed professional engineer experienced in the design and construction of dams to assist in complying with the following recommendations and remedial measures.

The recommendations and remedial measures which should be initiated very soon are as follows:

a. Facilities

1. Detailed hydrologic and hydraulic analyses should be performed to determine the need for and type of migating measures required to increase the capacity of the spillway.

2. Stability analyses should be performed to determine the need for and type of migating measures required to ensure that the dam is stable.

3. The outlet works should be repaired to allow for emergency drawdown of the reservoir.

4. The cause of the seepage should be investigated and, if necessary, a means of seepage control should be designed and implemented.

5. Trees and bushes should be removed from the face of the embankment. Any remaining voids should be filled with suitable, thoroughly compacted material.

6. The downstream channel should be kept free of debris.

7. Bare spots on the embankment should be seeded to control erosion and riprap should be placed on the upstream slope to provide erosion protection.

8. The deteriorated concrete on the spillway should be repaired.

9. During or following the installation of drawdown facilities, the reservoir should be lowered to permit a survey of the dam (particularly to define the upstream slope) and to assess the extent of sedimentation within the reservoir.

b. Operation and Maintenance Procedures.

1. The Owner should develop written operating procedures and a periodic maintenance plan to ensure the safety of the dam within one year from the date of approval of this report.

2. An emergency action plan should be developed which outlines actions to be taken by the Owner to minimize the downstream effects of an emergency. This plan should include an effective warning system.

APPENDIX

A

Check List Engineering Data

Design, Construction, Operation

Phase I

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION
PHASE I

NAME OF DAM N.J. No Name No. 30

ID # NJ 00339

ITEM	REMARKS
AS-BUILT DRAWINGS	None available
REGIONAL VICINITY MAP	Refer to Appendix E, Figure 1, Page 1
CONSTRUCTION HISTORY	No Records Available
TYPICAL SECTIONS OF DAM	Refer to Appendix E, Sheet 4
OUTLETS - PLAN	Refer to Appendix E, Sheets 2 through 4
DETAILS	
CONSTRAINTS	
DISCHARGE RATINGS	None available
RAINFALL/RESERVOIR RECORDS	None available

ITEM	REMARKS
DESIGN REPORTS	None available.
GEOLOGY REPORTS	None provided. Refer to Appendix F.
DESIGN COMPUTATIONS HYDROLOGY & HYDRAULICS DAM STABILITY SEEPAGE STUDIES	No data available.
MATERIALS INVESTIGATIONS BORING RECORDS LABORATORY FIELD	No information available.
POST-CONSTRUCTION SURVEYS OF DAM	None known of.
BORROW SOURCES	Unknown

ITEM	REMARKS
MONITORING SYSTEMS	None observed.
MODIFICATIONS	No records available.
HIGH POOL RECORDS	None known of.
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	None known of.
PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	No records available.
MAINTENANCE OPERATION RECORDS	None known of.

ITEM	REMARKS
SPILLWAY PLAN SECTIONS DETAILS	Refer to Appendix E., Sheets 2 and 4.
OPERATING EQUIPMENT PLANS & DETAILS	No plans and/or details of the reservoir drain system are available.
MISCELLANEOUS	

APPENDIX

B

Check List

Visual Inspection

Phase I

CHECK LIST
VISUAL INSPECTION
PHASE I

Name Dam N.J. No Name #30 Dam County Morris State New Jersey National ID # 00339

Type of Dam Earth Embankment Hazard Category High

Date(s) Inspection 4/24/81 & 5/4/81 Weather Cloudy (4/24/81) Temperature 55°F (4/26/81)

Pool Elevation at Time of Inspection ±1135.5 NGVD (4/24/81) Tailwater at Time of Inspection ± 1111 NGVD (4/24/81)

Inspection Personnel:

Len Beck
Dick Horvath
Jon Rauschkolb
Lee DeHeer (5/4/81)

Dick Horvath Recorder

Remarks:

David R. Estler, Engineering- inspector/designer for the Morris Clark Park Commission, met (4/24/81) us at the site. Drian Heverin and Bruce Uibel, U.S.Army Corps of Engineers, Phila. District and John Moyle, New Jersey Dept. of Environmental Portection accompained Lee DeHeer on 5/4/81.

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	None observed.	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	None observed.	
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	None observed.	
VERTICAL AND HORIZONTAL ALIGNMENT OF THE CREST	Vertical alignment varies by about 0.6 feet over the length of the dam. Horizontal alignment appears to be satisfactory.	
RIPRAP FAILURES	None observed.	

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
DRAINS	None	
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	Appears satisfactory.	
ANY NOTICEABLE SEEPAGE	100' left of spillway 150' downstream of crest at toe some discoloration of seepage water; 2 sources 10 feet apart, 3 to 5 GPM. At toe of right abutment, seepage about 2 gpm, ground soft and moist.	Investigate the source & nature of the seepage.
STAFF GAGE AND RECORDER		
DRAINS		

OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	None observed.	
INTAKE STRUCTURE	Concrete box 48' left of spillway.	
OUTLET STRUCTURE	Concrete pipe 12-inch diameter.	
OUTLET CHANNEL	Natural streambed.	
EMERGENCY GATE	Submerged & inoperable.	Should be restored to working condition.

UNGATED SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	The weir is 10.5 feet wide. Concrete is severely spalled and rebars are exposed.	Concrete should be repaired.
APPROACH CHANNEL	The impoundment is the approach channel.	
DISCHARGE CHANNEL	Natural rock outcrop which drops off to a boulder strewn poorly defined channel.	
BRIDGE AND PIERS	Bridge over spillway consist of wood boards over the top of the spillway supported by steel stringer.	

INSTRUMENTATION

VISUAL EXAMINATION	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	None observed.	
OBSERVATION WELLS	None observed.	
WEIRS	None observed.	
PIEZOMETERS	None observed.	
OTHER	None observed.	

RESERVOIR

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	Entire perimeter of the reservoir is heavily forested. The banks of the reservoir are on slopes varying between 5 and 25 percent.	
SEDIMENTATION	No indications of excessive sedimentation was noted in the reservoir.	

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	The downstream channel of Weldon Brook is boulder strewn & passes through heavily forested areas. Many logs have fallen into the channel.	
SLOPES	Channel side slopes are poorly defined varying from nearly vertical to 10H:1V in some spots. Channel gradient averages about 2 percent between No Name No. 30 and Lake Shawnee.	
APPROXIMATE NO. OF HOMES AND POPULATION	Approximately 6 homes might be affected on the shores of Lake Shawnee. Door sill lowest home is about 3 feet above streambed near confluence of Weldon Brook and Lake Shawnee.	No Name No. 30 is a "Significant" hazard structure.

APPENDIX

C

Hydrologic & Hydraulic Data

NEW JERSEY NO NAME NO. 30 DAM
APPENDIX C
HYDROLOGIC & HYDRAULIC ENGINEERING DATA

TABLE OF CONTENTS

O'BRIEN & GERE

SUBJECT	SHEET	BY	DATE	JOB NO
N.J. No NAME 30 Dam	1	JFK	5-27-81	1800-006-113
		JFK	6/10/81	

HYDROLOGY CALCULATIONS

Drainage Area = 0.94 sq. mi.

STAGE - STORAGE DATA

Elevation	Area (Acres)
1135 (Assumed Normal Pl.)	13.5
1140	21.4
1160	71.9
1180	116

PMP DATA - HMR REPORT 33

Area is in Zone 1 of PMP ALL Season Envelope

24 hr., 200 sq.mi. Rainfall = 22 in.

Storm Distribution

Hr.	%
6	111
12	123
24	133
48	142

BASIN LAG TIME

1. SCS Upland Method:

Greatest hydraulic distance to reservoir consists of 2500' of overland flow and 4000' of streamflow

Avg. overland slope = $\frac{\Delta El.}{d} = \frac{1300 - 1200}{2500} = 0.04 \frac{ft}{ft}$

O'BRIEN & GERE

SUBJECT	SHEET	BY	DATE	JOB NO
N.J. No Name 30 DAM	2	VFK	5-27-81	1800-006-113

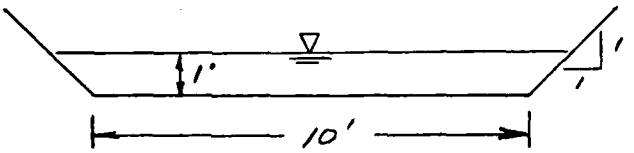
VFK 6/10/81

Overland velocity = 0.50 fps (SCS Handbook) (NEH 4, Chap 15, Pg 15-2 Fig 15.2)

$T_o = \frac{2500}{.50} = 5000 \text{ sec.} = 1.39 \text{ hrs.}$

Stream velocity, $V = \frac{1.49}{n} R^{2/3} S^{1/2}$

$S = \frac{\Delta El.}{d} = \frac{1190 - 1135}{4000} = 0.0138 \frac{ft}{ft}$



$R = \frac{A}{P} = \frac{11}{2\sqrt{2}+10} = 0.8575 \text{ ft}$

Assume $n = 0.06$

$V = \frac{1.49}{.06} (.8575)^{2/3} (.0138)^{1/2} = 2.63 \text{ fps}$

$T_s = \frac{4000}{2.63} = 1521 \text{ sec} = 0.42 \text{ hrs.}$

$T_c = T_o + T_s = 1.39 + 0.42 = 1.81 \text{ hrs.}$

Lag, $L = 0.6\, T_c = 0.6(1.81) = \underline{1.09} \text{ hrs.}$

O'BRIEN & GERE

SUBJECT	SHEET	BY	DATE	JOB NO
N.J. No Name 30 DAM	3	JFR ✓	5-27-81 6/10/81	1800-006-113

2. SCS Curve Number Method:

$$L = \frac{\ell^{.8}\,(S+1)^{.7}}{1900\,Y^{.5}}$$

$$S = \frac{1000}{CN} - 10 = \frac{1000}{65} - 10 = 5.38$$

$\ell = 6500$ ft.

$$Y = \frac{1300 - 1135}{6500} \times 100 = 2.54\,\%$$

$$L = \frac{(6500)^{.8}\,(5.38+1)^{.7}}{1900\,(2.54)^{.5}} = 1.36 \text{ hrs.}$$

3. California Highways Method:

$$T_c = \left(\frac{11.9\,L^3}{H}\right)^{.385}$$

$L = 6500/5280 = 1.23$ mi.

$H = \Delta El. = 1300 - 1135 = 165$ ft.

$$T_c = \left(\frac{11.9\,(1.23)^3}{165}\right)^{.385} = 0.46 \text{ hrs.}$$

$L = 0.6\,(.46) = 0.28$ hrs.

O'BRIEN & GERE

SUBJECT	SHEET	BY	DATE	JOB NO
N.J. No NAME 30 DAM	4	JFR	5-27-81	1800-006-113

VFE 6/10/81

4. Kerby Method:

$$T_c = \left(\frac{2}{3}\,\frac{Ln}{\sqrt{S}}\right)^{.467}$$

$L = 6500$ ft.

$n = 0.06$

$S = 0.0254$ ft/ft.

$$T_c = \left(\frac{2}{3}\,\frac{(6500)(.06)}{\sqrt{.0254}}\right)^{.467} = 32 \text{ min.}$$

$L = 0.6\,(32/60) = 0.32$ hours

↳ USE $L = \underline{1.1}$ hrs.

(SCS Upland Method)

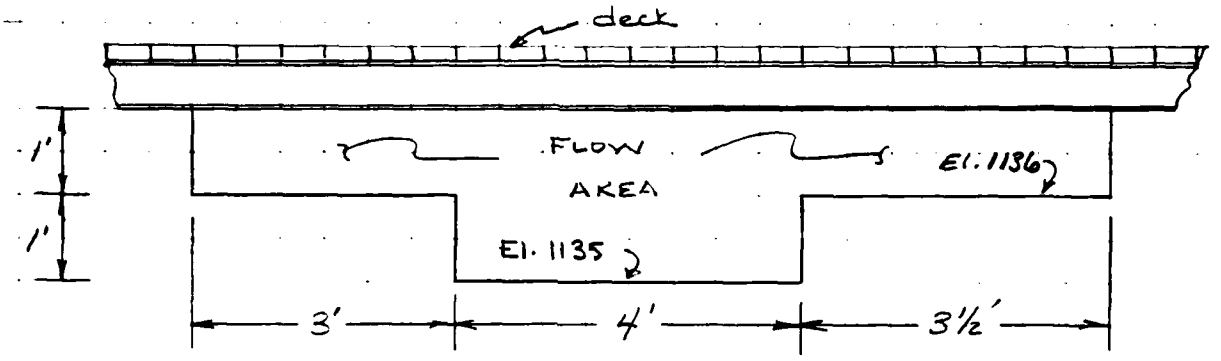
O'BRIEN & GERE

OBJECT	SHEET	BY	DATE	JOB NO
N.J. No Name 30 Dam	5	JFR	5-27-81	1800-006-113

✓ 6/10/81

HYDRAULICS CALCULATIONS

SPILLWAY DISCHARGE



For this spillway configuration, pressure flow begins when H, the difference in elevation from the reservoir water surface to the spillway crest, is 3 feet.

Weir Flow

$$Q_w = C L_1 H_1^{3/2} + C L_2 H_2^{3/2}$$

where $C = 3.35$ (King & Brater)
$L_1 = 4'$
H_1 is measured above El. 1135
$L_2 = 6\frac{1}{2}'$
H_2 is measured above El. 1136

$$Q_w = 3.35\,(4)\,H_1^{3/2} + 3.35\,(6.5)\,H_2^{3/2}$$

$$= 13.4\,H_1^{3/2} + 21.775\,H_2^{3/2}$$

O'BRIEN & GERE

SUBJECT	SHEET	BY	DATE	JOB NO
N. J. No Name 30 Dam	6	JFR	5-21-81	1800-006-113

✓ 6/10/81

Pressure Flow

$$Q_p = A_3\sqrt{2gH_3} + A_4\sqrt{2gH_4}$$

where $A_3 = 2 \times 4 = 8\ ft^2$

$A_4 = 1 \times (3+3\frac{1}{2}) = 6.5\ ft^2$

H_3 = height of W.S.E. above centroid of A_3

H_4 = height of W.S.E. above centroid of A_4

$$Q_p = 8\sqrt{2(32.2)H_3} + 6.5\sqrt{2(32.2)H_4}$$

$$= 64.10\sqrt{H_3} + 52.08\sqrt{H_4}$$

W.S. El.	H_1 (Ft)	H_2 (ft)	Q_w* (cfs)	H_3 (ft)	H_4 (ft)	Q_p* (cfs)	Q* (cfs)
1135	0	-	0	-	-	-	0
1136	1	0	13	-	-	-	13
1137	2	1	60	-	-	-	60
1138	3	2	131	2	1.5	154	131
1139	4	3	220	3	2.5	193	193
1140	5	4	-	4	3.5	226	226
1141	6	5	-	5	4.5	254	254
1142	7	6	-	6	5.5	279	279
1143	8	7	-	7	6.5	302	302
1144	9	8	-	8	7.5	324	324

* Rounded to nearest cfs

O'BRIEN & GERE

SUBJECT	SHEET	BY	DATE	JOB NO
No Name 30	7	JFR	5-27-81	1800-006-113

1B 6/10/81

DAM OVERTOPPING DISCHARGE

$$Q_D = C L_L H_D^{3/2}$$

where $C = 2.6$ (grass and tree cover)
L_D (max.) = 600'
H_D = height of W.S.E. above dam crest

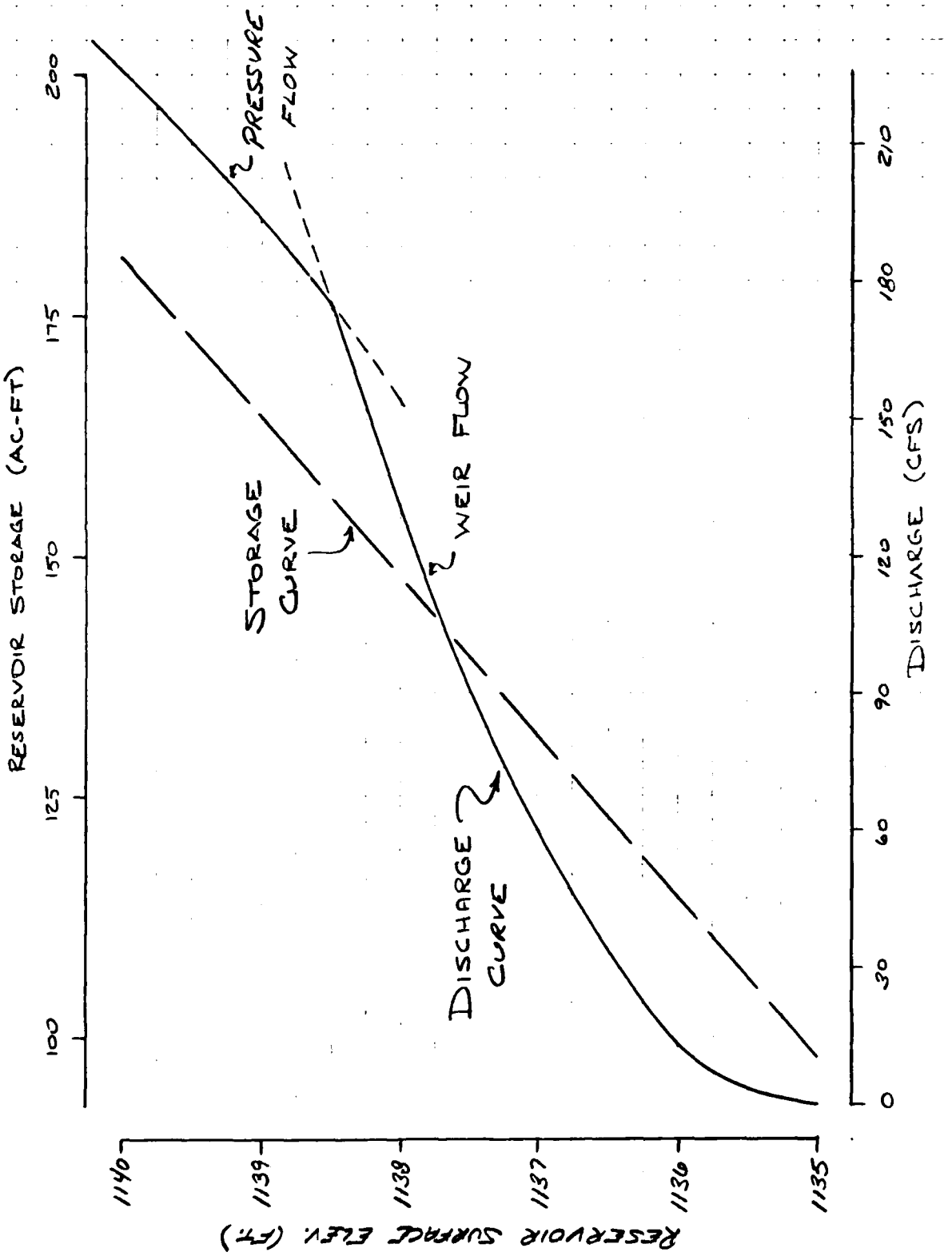
Dam discharge data is input on $D card in the HEC-1DB computer program. Variation in top of dam elevation is input on $L and $V cards.

RESERVOIR DRAW-DOWN

The reservoir drain is presently inoperable, therefore, no means of drawing down the reservoir exist.

O'BRIEN & GERE

SUBJECT	SHEET	BY	DATE	JOB NO
NO NAME 30	8	JFR	7-22-81	1800-00[illegible]-113



```
1**********
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION      JULY 1978
 LAST MODIFICATION 01-APR-80
**********
     1          A1
     2          A2                                   NATIONAL DAM SAFETY PROGRAM
     3          A3                                   NO-NAME-30
     4          B    300       0      10       0       0       0       0       0      -4       0
     5          B1     5
     6          J      1       6       1
     7          J1   .04     .06     .08     .10     .50    1.0
     8          N      0    LANE       0       0       0       0       1
     9          N1                                   FMF HYDROGRAPH
    10          M      1       2    0.94                                                   INFLOW TO LAKE
    11          P      0      22     111     123     133     142                       1
    12          T                                                      1.0    0.05
    13          W2            1.10
    14          X    1.0     .05       2
    15          K      1     DAM       0       0       0       0       1
    16          N1                                   OUTFLOW FROM DAM
    17          Y                                    1       1
    18          Y1     1                                                       -1135    -1
    19          Y4  1135    1136    1137    1138    1139    1140    1141    1142    1143    1144
    20          Y5     0      13      60     154     193     226     254     279     302     324
    21          $A     0    13.5    21.4    71.9     116
    22          $E  1114    1135    1140    1160    1180
    23          $$  1135
    24          $D1138.3     2.6     1.5     600
    25          $L   100     310     350     600
    26          $V1138.3 1138.5 1138.6 1138.9
    27          N     99
     1                        PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

                                RUNOFF HYDROGRAPH AT      LAKE
                                ROUTE HYDROGRAPH TO       DAM

                                NATIONAL DAM SAFETY PROGRAM
                                NO-NAME-30
                                FMF HYDROGRAPH

                                JOB SPECIFICATION
                                 NQ      NHR     NMIN    IDAY     IHR     IMIN    METRC    IPLT    IPRT   NSTAN
                                300        0       10       0       0       0        0       0      -4       0
                                                         JOPER     NWT   LROPT    TRACE
                                                            5       0       0        0

                                MULTI-PLAN ANALYSES TO BE PERFORMED
                                NPLAN= 1 NRTIO= 6 LRTIO= 1
                                RTIOS=   .04    .06     .08     .10     .50    1.00
```

********** ********** ********** ********** **********

SUB-AREA RUNOFF COMPUTATION

INFLOW TO LAKE

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
LAKE	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	2	.94	0.00	.94	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	22.00	111.00	123.00	133.00	142.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS .800

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	1.00	.05	0.00	0.00

UNIT HYDROGRAPH DATA

TC= 0.00 LAG= 1.10

RECESSION DATA

STRTQ= 1.00 QRCSN= .05 RTIOR= 2.00

END-OF-PERIOD FLOW

0 MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
									SUM	24.99	22.60	2.39	82439.
										(635.)	(574.)	(61.)	(2334.41)

********** ********** ********** ********** **********

HYDROGRAPH ROUTING

OUTFLOW FROM DAM

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
DAM	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	1135.	1

SH 10

STAGE	1135.00	1136.00	1137.00	1138.00	1139.00	1140.00	1141.00	1142.00	1143.00	1144.00
FLOW	0.00	13.00	60.00	154.00	193.00	226.00	254.00	279.00	302.00	324.00
SURFACE AREA=	0.	14.	21.	72.	116.					
CAPACITY=	0.	95.	181.	1065.	2926.					
ELEVATION=	1114.	1135.	1140.	1160.	1180.					

CREL	SPWID	COOW	EXPW	ELEVL	COOL	CAREA	EXPL
1135.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COOD	EXPD	DAMWID
1138.3	2.6	1.5	600.

CREST LENGTH	100.	310.	350.	600.
AT OR BELOW ELEVATION	1138.3	1138.5	1138.6	1138.9

PEAK OUTFLOW IS 53. AT TIME 42.67 HOURS

PEAK OUTFLOW IS 187. AT TIME 42.17 HOURS

PEAK OUTFLOW IS 100. AT TIME 42.33 HOURS

PEAK OUTFLOW IS 1679. AT TIME 40.83 HOURS

PEAK OUTFLOW IS 146. AT TIME 42.17 HOURS

PEAK OUTFLOW IS 3360. AT TIME 40.83 HOURS

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6
				.04	.06	.08	.10	.50	1.00
HYDROGRAPH AT	LAKE	.94	1	136.	203.	271.	339.	1694.	3388.
		(2.43)	(	3.84)(5.76)(	7.67)(	9.59)(	47.96)(	95.93)(	
ROUTED TO	DAM	.94	1	53.	100.	146.	187.	1679.	3360.
		(2.43)	(	1.50)(2.84)(	4.14)(	5.30)(	47.56)(	95.15)(	

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1135.00	1135.00	1139.30
STORAGE	95.	95.	147.
OUTFLOW	0.	0.	166.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
.04	1136.85	0.00	122.	53.	0.00	42.67	0.00
.06	1137.43	0.00	132.	100.	0.00	42.33	0.00
.08	1137.92	0.00	140.	146.	0.00	42.17	0.00
.10	1138.41	.11	149.	187.	1.50	42.17	0.00
.50	1139.39	1.09	168.	1679.	6.83	40.83	0.00
1.00	1139.95	1.65	180.	3360.	9.00	40.83	0.00

SA 11

APPENDIX

D

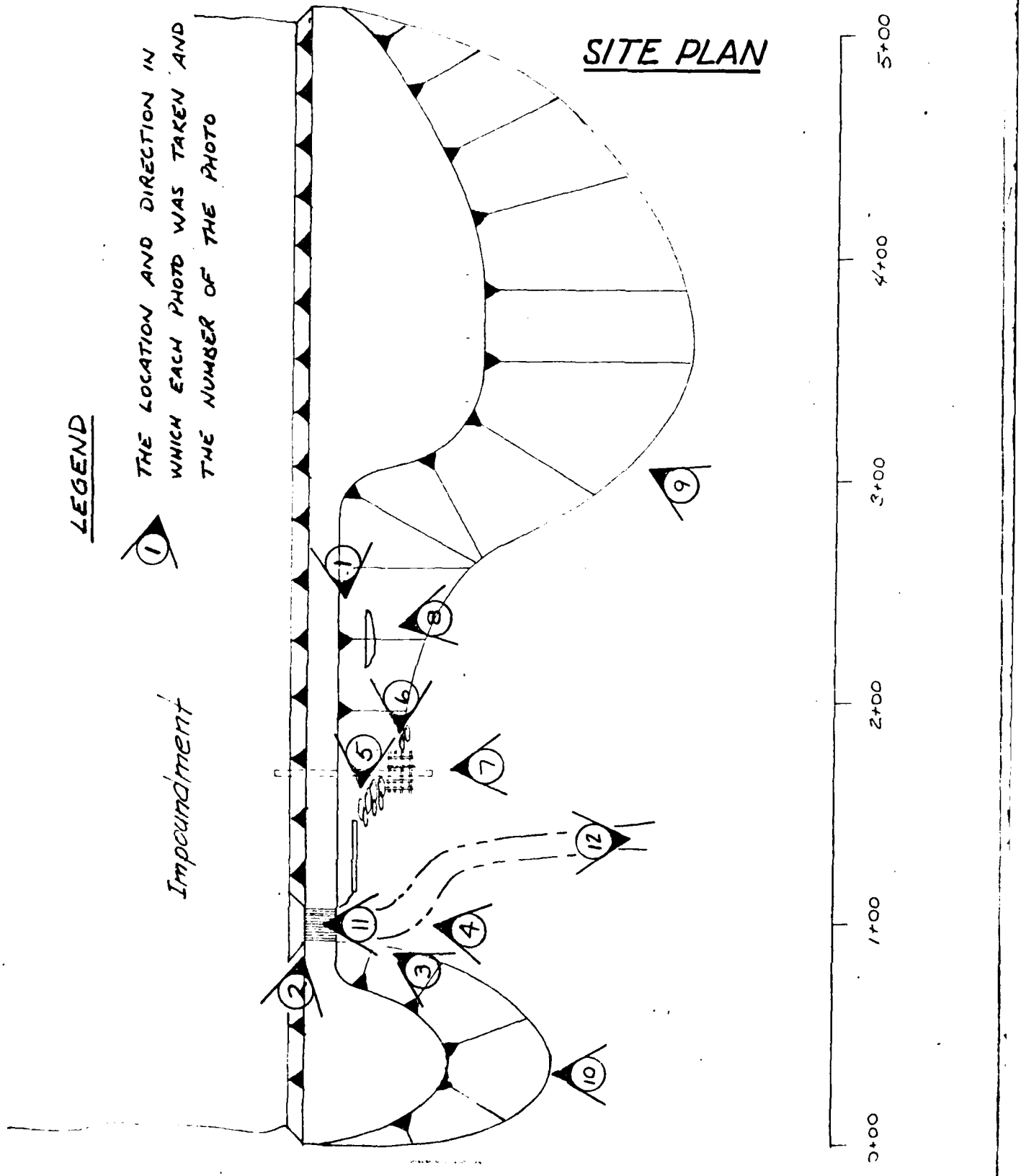
Photographs

APPENDIX D
SELECTED PHOTOGRAPHS OF THE SITE

O'BRIEN & GERE
ENGINEERS, INC

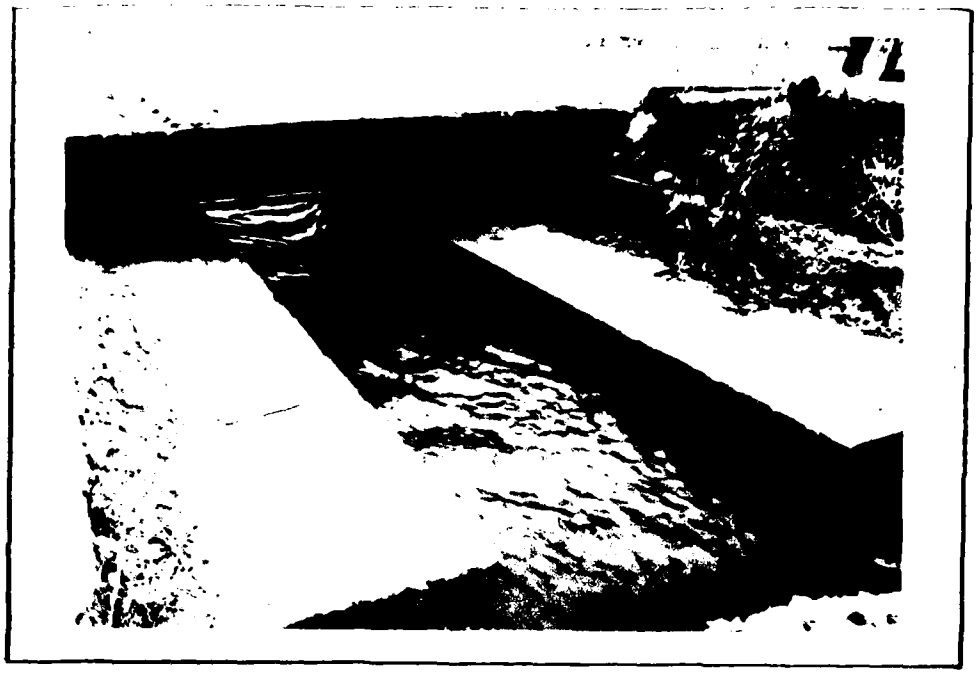
SUBJECT	SHEET	BY	DATE	JOB NO
New Jersey No Name No. 30 Dam	A	JR	6/9/81	1800.006-113

SITE PLAN

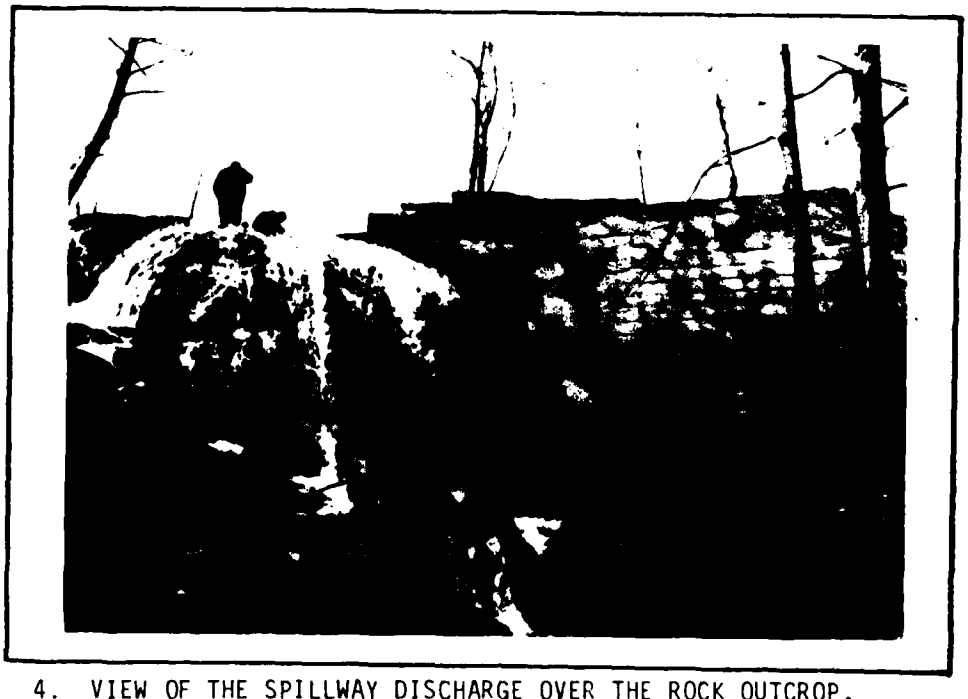


1. VIEW ALONG EMBANKMENT CREST LOOKING TOWARDS THE RIGHT ABUTMENT SHOWING THE DOWNSTREAM SLOPE AND SPILLWAY DISCHARGE CHANNEL. (4/24/81)

2. VIEW OF THE UPSTREAM ENTRANCE TO THE SPILLWAY SHOWING DISINTEGRATED CONCRETE, BRIDGE DECK AND THE DAM CREST. (4/24/81)



3. VIEW OF THE SPILLWAY CREST AND ERODED CONCRETE ON THE DOWNSTREAM SIDE. (4/24/81)



4. VIEW OF THE SPILLWAY DISCHARGE OVER THE ROCK OUTCROP, CONCRETE WALL AND DEBRIS IN THE DOWNSTREAM CHANNEL. (4/24/81)

5. VIEW OF THE LEFT END OF THE CONCRETE WALL SHOWING PROTRUDING REINFORCING BARS AND WOOD FORMWORK IN PLACE. (4/24/81)

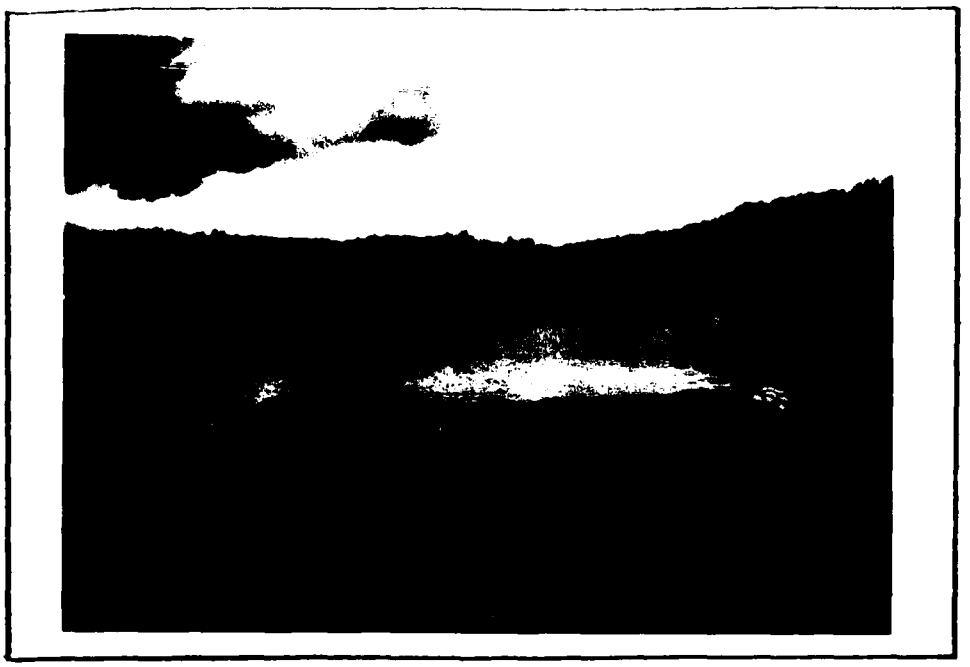
6. VIEW OF THE TIMBER CRIB AND ROCKS ON THE DOWNSTREAM EMBANKMENT SLOPE. (4/24/81)

7. VIEW OF THE 12-INCH DIAMETER REINFORCED CONCRETE RESERVOIR DRAIN PIPE AND DISPLACED TIMBER CRIBBING AT THE DOWNSTREAM TOE. (4/24/81)

8. VIEW OF CONCRETE IN THE DOWNSTREAM FACE OF THE EMBANKMENT. (4/24/81)

9. VIEW OF SEEPAGE AT THE DOWNSTREAM TOE OF THE DAM ABOUT 100 FEET TO THE LEFT OF THE SPILLWAY. (4/24/81)

10. VIEW OF SEEPAGE AT THE DOWNSTREAM TOE NEAR THE RIGHT ABUTMENT. (4/24/81)



11. VIEW OF THE IMPOUNDMENT LOOKING UPSTREAM FROM THE SPILLWAY BRIDGE DECK. (4/24/81)

12. VIEW OF THE DOWNSTREAM CHANNEL LOOKING DOWNSTREAM. (4/24/81)

13. VIEW OF THE DOWNSTREAM HAZARD AREA AT LAKE SHAWNEE SHOWING A HOUSE 3 FEET ABOVE STREAMBED. (4/24/81)

14. VIEW OF LAKE SHAWNEE SHOWING THE POTENTIAL DAMAGE AREA IN THE BACKGROUND. (4/24/81)

APPENDIX

E

Drawings

NEW JERSEY NO NAME NO. 30 DAM
APPENDIX E
DRAWINGS

TABLE OF CONTENTS

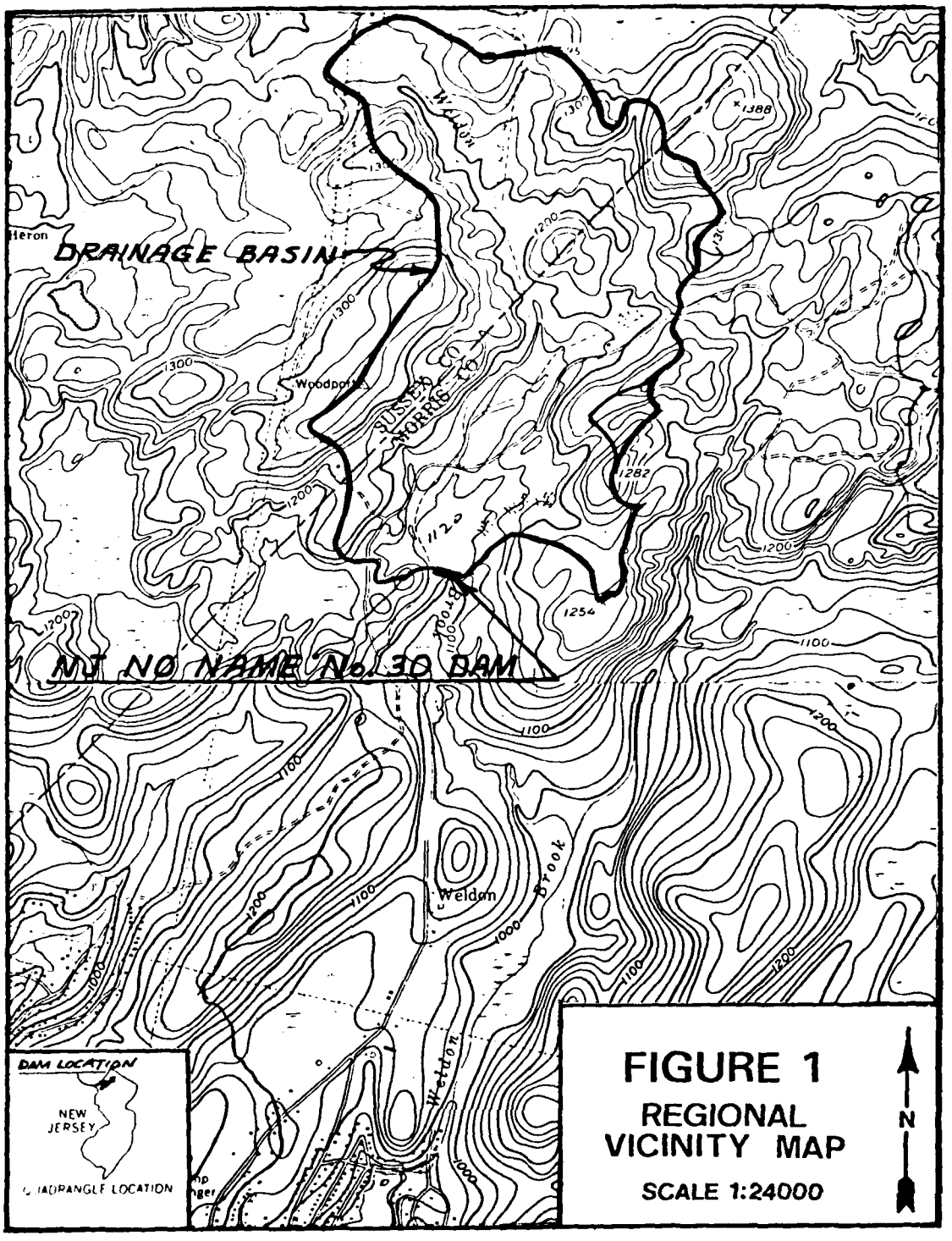
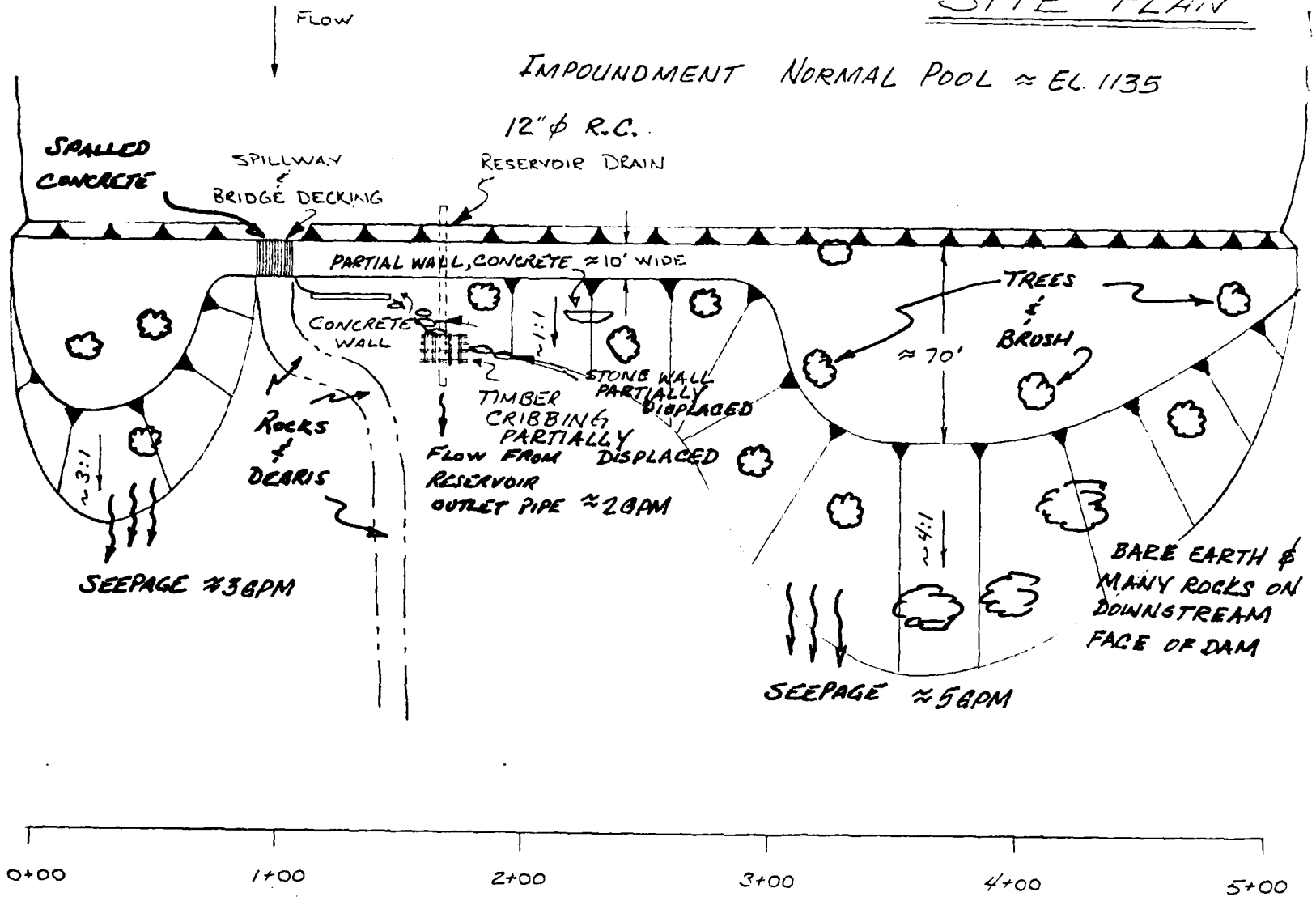


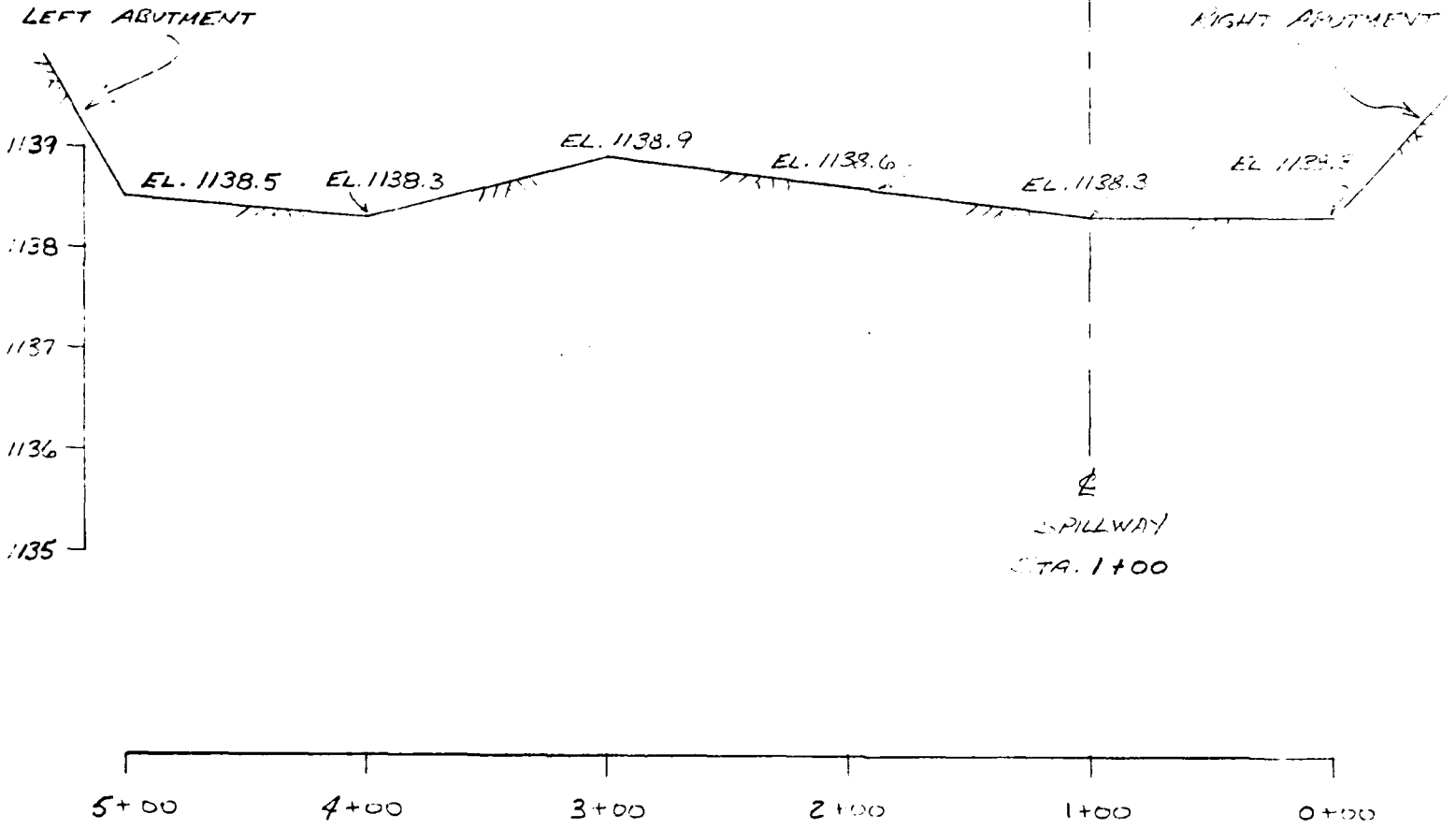
FIGURE 1
REGIONAL VICINITY MAP
SCALE 1:24000

SITE PLAN



O'BRIEN & GERE ENGINEERS, INC

SUBJECT	SHEET	BY	DATE	JOB NO
New Jersey No Name No. 30 Dam	2			



PROFILE ALONG CENTER LINE OF DAM

O'BRIEN & GERE ENGINEERS, INC

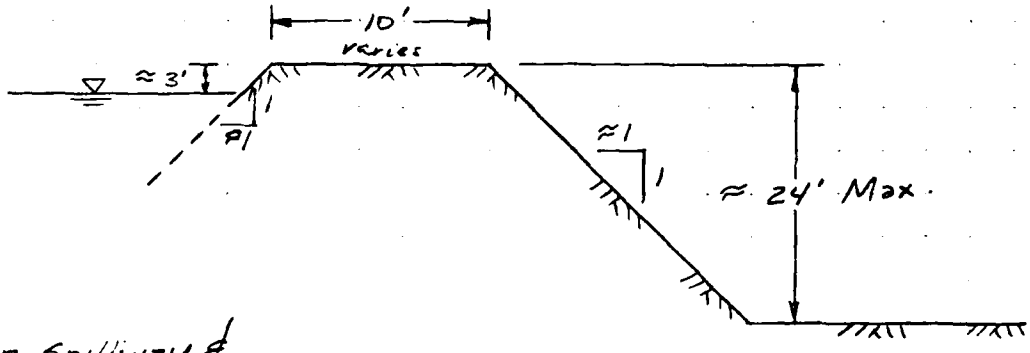
SUBJECT	SHEET	BY	DATE	JOB NO
N.J. No Name 30 DAM	3	VFK	5-27-81	1800-006-113

O'BRIEN & GERE

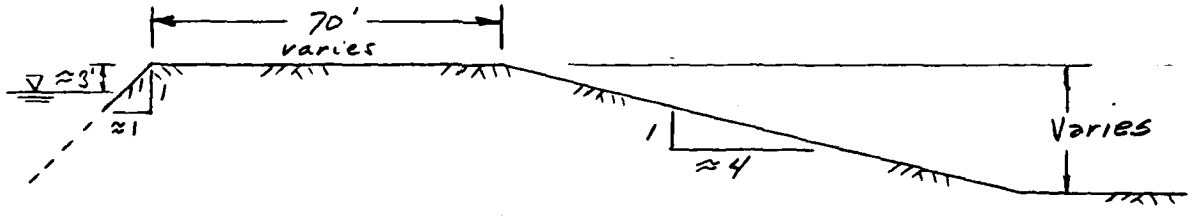
SUBJECT	SHEET	BY	DATE	JOB NO
N. J. No Name No. 30 DAM	4	JFR	6-8-81	1800-006-113

TYPICAL DAM SECTIONS

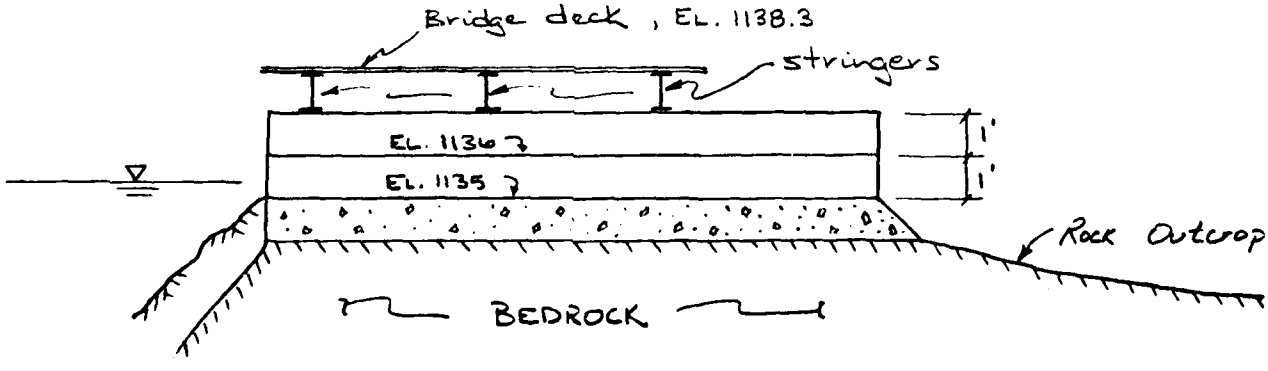
Near Spillway:



Between Spillway & Abutments:



TYPICAL SPILLWAY SECTION



APPENDIX

F

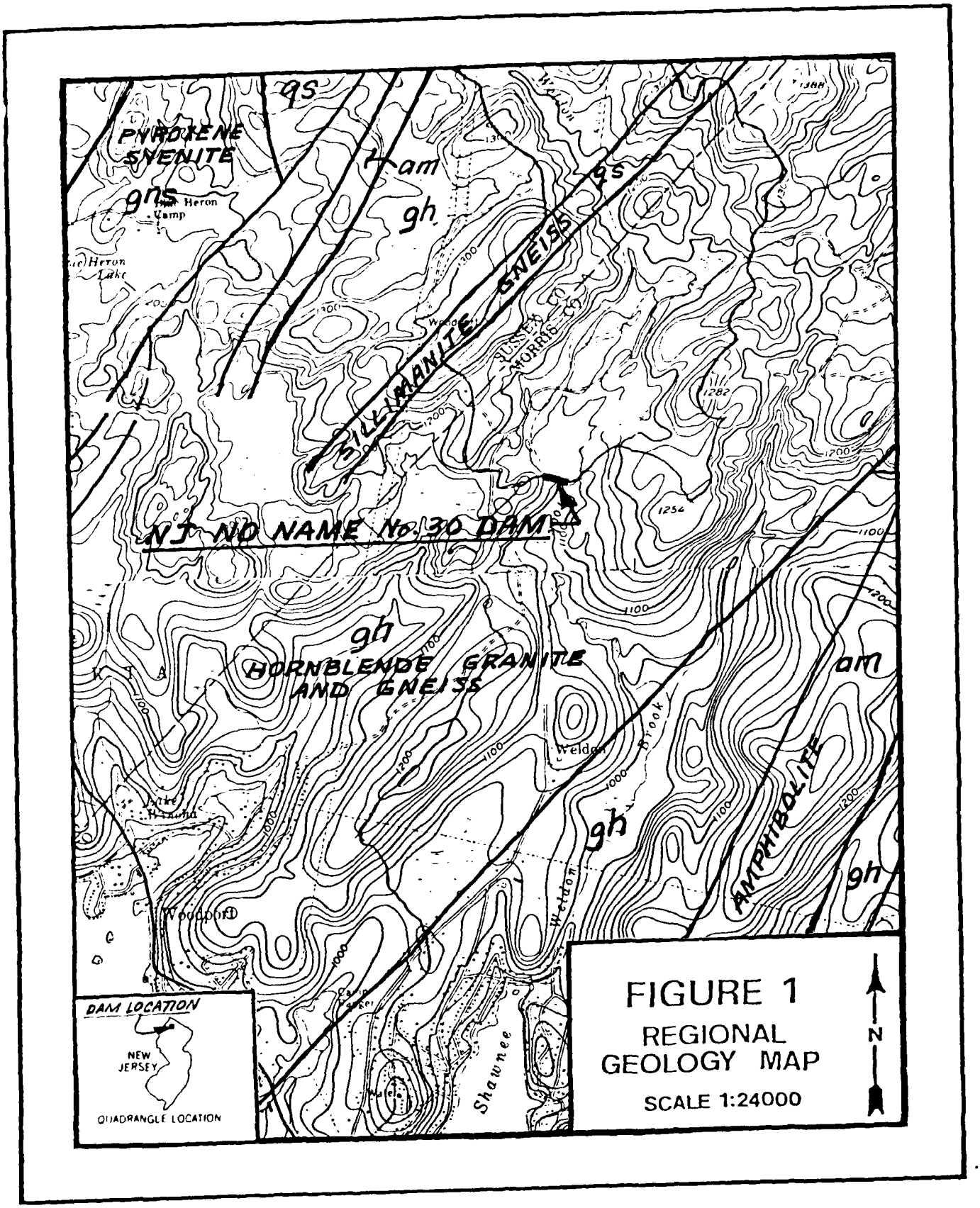
Site Geology

SITE GEOLOGY

NEW JERSERY NO NAME NO. 30 DAM

New Jersey No Name No. 30 Dam is located in Morris County within the New Jersey Highlands subprovince of the New England Highlands physiographic province. The dam and lake area is underlain by massive Pre-Cambrian metamorphic rocks represented by the Byram and Losee gneiss units. These are mantled in part by stratified drift deposits of the Wisconsin glacial epoch. Depth to bedrock varies with the thickness and distribution of the drift deposits which occur as eskers, kames and terraces. Bedrock structure may contain minor faults, however no significant faults are noted in mapped areas in the vicinity of the dam.

Overburden may contain significant amounts of sand and gravel, depending on the mode of deposition and as such would present a highly permeable foundation.


PYROXENE SYENITE
gs
gns
am
gh
Heron Camp
Heron Lake
SILLIMANITE GNEISS
SUSSEX MORRIS CO.
NJ NO NAME No. 30 DAM
HORNBLENDE GRANITE AND GNEISS
AMPHIBOLITE
Weldon Brook
Woodport
Lake Hopatcong
Shawnee
DAM LOCATION
NEW JERSEY
QUADRANGLE LOCATION
FIGURE 1
REGIONAL GEOLOGY MAP
SCALE 1:24000
N

END

DATE
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9 - 81

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